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ENTOMOLOGICAL NEWS

MARCH, 1942

Vol. LIII No. 3

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
1900 Race Street

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by the American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., R. G. Schmieder, Ph.D., V. S. L. Pate, L. S. Mackey, A. G. Richards, Jr., Ph.D., J. W. H. Rehn, Associate Editors.

Subscription price, U. S. Currency, per year of ten (10) numbers: United States, Central and South America $3.00, Canada $3.15, Foreign $3.30.

ADVERTISING RATES: Full width of page. Payments in advance.

One issue,	1 in.,	$ 1.20,	3 in.,	$ 3.00,	6 in., $ 7.00
Ten issues,	"	8.00,	"	25.00,	" 60.00

SUBSCRIPTIONS. All remittances and communications regarding subscriptions, non-receipt of the "News" or of reprints, and requests for sample copies, should be addressed to

ENTOMOLOGICAL NEWS, 1900 Race Street, PHILADELPHIA, PA.

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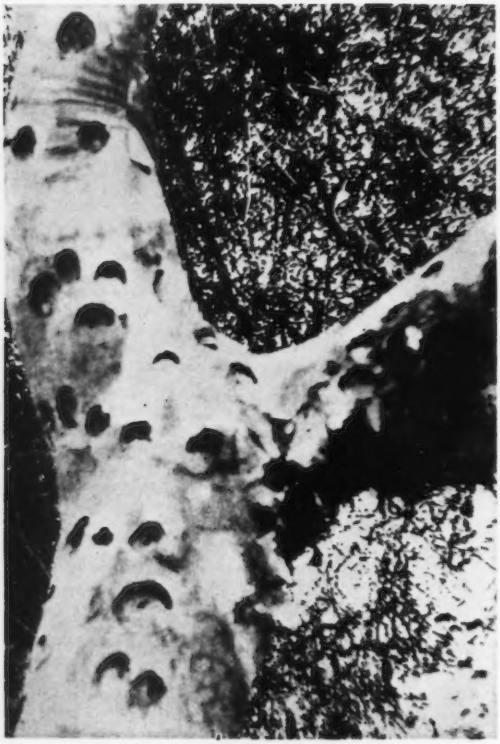


LAGOCHIRUS ARANEIFORMIS—BEARD.

PHOTOGRAPH, SUBMITTED BY DR. WHITNEY, SHOWING EXIT HOLES OF THIS CERAMBYCID BEETLE.

ENTOMOLOGICAL NEWS

VOL. LIII MARCH, 1942 No 3

A Note on Lagochirus araneiformis L. (Coleop.: Cerambycidae).

By RAIMON L. BEARD, Connecticut Agricultural Experiment Station, New Haven, Connecticut.

(Plate II.)

A communication addressed to the Yale Forestry School, and referred to the Entomology Department of the Connecticut Experiment Station, aroused the interest of several entomologists.

The letter, from Dr. Willis Whitney, of Schenectady under date of March 23, 1941, reported the finding at Nassau, British West Indies, of numerous circular cavities under the bark of *Bursera simiruba*. The cavities, found only in dead or dying wood, were approximately two inches in diameter and covered in many cases with the bark which remained attached by a thin edge in the manner of a "trap door". Leading into the wood from the large cavity was a tunnel of much smaller diameter. A native of the islands related to Dr. Whitney that a "small black bee" cut out the flap with its "nose". The "bee" then went behind the "trap door" to deposit an egg, after which it left to return only to release its offspring when the latter matured. Dr. Whitney questioned the story, but could find no information about it.

The present writer could find no reference to this type of insect habitat in the literature nor any information from correspondence with some other workers. The nature of the "trap door" did not suggest the work of a carpenter bee as the story of the native of the Bahamas would imply. Nor was it the work of a trap-door spider, which might have taken advantage of a pre-existing cavity in the wood—a fact verified by Dr. Petrunke-

vitch, of Yale University. Rather, the bark covering of the cavity, by its bevelled shape, showed that it had been chewed from the inside out, as would be done by an emerging insect, and not from the outside in, as would be done by one seeking to oviposit. A cerambycid beetle would be the most likely suspect.

Correspondence with Dr. George N. Wolcott elicited the correct answer. Dr. Wolcott first reported that *B. simiruba,* or almacigo as it is called in Puerto Rico, quite commonly shows the type of injury described by Dr. Whitney, but that he had seen only material too old to contain the insect responsible. He later found fresher material containing larvae and pupae in the wood several inches beneath the bark. He was able to rear these through and identify the adult as a cerambycid, *Lagochirus araneiformis* L. Dr. Wolcott suggested that the callow adult made the large cavity just under the bark in which it rested until its wings hardened.

Leng (1920) gave the distribution of this species of cerambycid as South America, West Indies and Florida. Bates (1879-1886) included Mexico, British Honduras, Guatemala, Nicaragua, Costa Rica, West Indies, South America, Tahiti, and the Sandwich Islands. Dr. Wolcott mentioned that *L. araneiformis* is not specific as to host, he having reared it from mahogany as well as from the almacigo. Smith (1921) and Wilson (1923) have reported this insect attacking sugar-cane, and Craighead (1923) mentioned *Ficus* as a host.

REFERENCES.

BATES, H. W. .1879-1886. Biologia Centrali-American. Insecta. Coleoptera, Vol. V. Longicornia.

CRAIGHEAD, F. C. 1923. North American Cerambycid Larvae. Canadian Department of Agriculture, Tech. Bull. 27.

LENG, C. W. 1920. Catalogue of the Coleoptera of America, North of Mexico, p. 282.

SMITH, L. 1921. Virgin Islands Agricultural Exp. Sta. Bull. 2: 22.

WILSON, C. E. 1923. Virgin Islands Agr. Exp. Sta. Report, 1922: 16.

Since this article was submitted, a complete and delightfully written story of this insect appeared under title of "Isn't Research Fun" by Willis R. Whitney, in The Caribbean Forester, 3: 47-57, 1942.

Notes on Some Cucullinae (Phalaenidae, Lepidoptera) II.

On the Identity of Lithophane ferrealis Grote and Xylina innominata Smith, with Descriptions of Some New Forms of the Genus Lithophane Hübner.

By J. G. FRANCLEMONT, Ithaca, New York.

(Continued from page 35.)

LITHOPHANE INNOMINATA Smith (Pl. I, fig. 14). *Lithophane signosa Grote,* 6th, Ann. Rept. Peab. Acad. Sc. 33, 1874 [misidentification, not *signosa* Walker, 1857].

Xylina innominata Smith, Bull. U. S. N. M., xliv (Cat. Noct.), 227, (nom. nov. for *signosa* Grt. nec Wlk.) 1883 [not *innominata* Smith, Trans. Am. Ent. Soc., xxvii, 20, pl. III, figs. 8 & 9, 1900].

This species has been generally misdetermined in collections; it actually is a rare form colored like *ferrealis.*

When Smith proposed this name for *signosa* Grote [nec Walker], he said, "The new name is intended to apply to that species identified and labeled as *signosa* by Mr. Grote and has no type specimen." In the last part of his statement he is decidedly in error, as the type of the name *innominata* was the specimen Grote had before him when he drew up his description of the species he considered *signosa.* Grote's description is here reproduced, so there can be no doubt as to what that author had before him.

"*Lithophane signosa. Xylina signosa* Walker, p. 627. ♂. Base of the forewing and costal region broadly ashen, with an ochreous tinge. The wing is else ferruginous, and the ordinary spots are pale, and lie on the cell surrounded by the darker ground color. The orbicular is oblique, rounded, moderate; the erniform upright; the spots are not distinctly annulated. The veins are dotted and black-marked beyond the t. p. line. The ordinary lines are lost and merely marked against the costal region by ferruginous streaks as in *ferrealis.* The claviform is indicated by a pale diffuse shade, and a broad diffuse blackish shade streak unites it with the transverse posterior line. The subterminal line is pale, more even, less strongly dentate than in *ferrealis,* preceded by the usual ferruginous marks, the narrow terminal space is almost entirely blackish, caused by

diffuse black streaks accompanying the veins, and there is a double row of terminal dots, more distinct than in *ferrealis*. The fringes are more straightly cut with pale than its near ally. Hind wings fuscous with ochrey tinted fringes. Abdomen flattened, with exceedingly slight dorsal tufts. Expanse 40 mm. Quebec (F. X. Bélanger)."

Mr. W. H. T. Tams very kindly furnished me with a photograph of the type of this species.

LITHOPHANE INNOMINATA form **illecebra** form. nov. (Pl. I, fig. 15).

Xylina innominata Smith, Trans. Am. Ent. Soc., xxvii, 20 pl. III, figs. 8 & 9, 1900 [not *innominata* Smith, Bull. U. S. N. M., xliv (Cat. Noct.), 227, 1883].

Head and thorax olive rufous; fore wing russet olivaceous to ochre buff; the basal line obsolescent; the antemedial line represented by a double series of black dots on the veins; the postmedial line, as the antemedial, represented by a series of dots; both lines obsolescent except for the aforementioned black dots; the median shade reddish russet to olive, diffuse, present on the outer as well as the inner side of the reniform; subterminal line an irregular light shade, edged on its inner side by russet or olive; the terminal line a series of small black lunules; the fringe concolorous with the general tone of the wing, but with an irregular dark line through its center and parallel to the termen; the orbicular vague, elliptical and oblique, edged on its inner side by the russet or olive of the median shade; the reniform evident, large and erect, constricted at the middle, outlined by russet or olive russet; a dark dash of varying length and intensity present in the submedian fold; the veins marked with black in the terminal area, the black is often diffuse and shades the whole terminal area. Hind wing shining fuscous black; the fringe rufous to olive, contrasting with the remainder of the wing. The abdomen blackish above.

This is the form that stands as *innominata* in most collections, but as has been pointed out previously, *innominata* is a suffused form equivalent to *ferrealis, lignicosta, pallidicosta*, etc.

This is the common (normal!) color form of this species and as such it agrees with *bethunei* and *patefacta;* from these two species, which it most closely resembles, it can be readily separated by its luteous to reddish olive color, the two aforementioned species being whitish or grayish.

This form is figured as typical *innominata* by Smith, Trans. Am. Ent. Soc., xxvii, pl. iii figs. 8 & 9, 1900.

Holotype: ♂, Ithaca, NEW YORK, Sept. 28, 1940 (J. G. Franclemont), [in Coll. Franclemont].

Allotype: ♀, Ithaca, New York, Sept. 30, 1940 (J. G. Franclemont), [in Coll. Franclemont].

Paratypes: 27 ♂ ♂, 32 ♀ ♀, Ithaca, New York, Sept.-April (J. G. Franclemont); 22 ♂ ♂, 25 ♀ ♀, McLean Bogs Reserve, Tompkins Co., New York, Sept.-Oct. (J. G. Franclemont); 5 ♂ ♂, 1 ♀, Chaffee, New York, Sept. (J. G. Franclemont); 1 ♂, 1 ♀, Sardinia, New York, Sept. (J. G. Franclemont); [all in Coll. Franclemont]. 1 ♂, Ithaca, New York, Oct. (L. R. Rupert); 1 ♂, 5 ♀ ♀, Richmond Gulf, Sardinia, New York, Sept. (L. R. Rupert); 1 ♂, East Concord, New York, Oct. (L. R. Rupert); 1 ♂, Third Lake, Fulton Chain, New York, Oct. 1934; [all in Coll. Rupert].

LITHOPHANE ORIUNDA form **canentissima** form. nov. (Pl. I, fig. 17).

This form lacks the white costa, the white annuli of the reniform and orbicular and the white filling of the reniform. The fore wing is a uniform claret brown, very strongly irrorate with hoary white; the reniform and orbicular are narrowly encircled with the same color, and then beyond this by blackish; the antemedial line hoary, oblique, irregularly dentate; the postmedial line hoary, dentate on the veins, excurved from below costa, then evenly incurved to submedian fold, then excurved to inner margin; claviform outlined by black. The hind wing rufous fuscous.

This form is a striking contrast to normal *oriunda* and undoubtedly corresponds to the unicolorous forms of the other species, corresponding in color to *petulca, hemina,* signosa and the others.

Holotype: ♂, Ithaca, NEW YORK, October 23, 1940 (J. G. Franclemont), [in Coll. Franclemont].

Paratypes: 1 ♂, 2 ♀ ♀, McLean Bogs Reserve, Tompkins County, New York, Oct. 5 & 12, 1940 (J. G. Franclemont), [in Coll. Franclemont]. 1 ♂, Ithaca, New York, Oct. 21, 1934 (L. R. Rupert); 1 ♂, 1 ♀, McLean Bogs Reserve, Tompkins

County, New York, Oct. 5, 1940 (L. R. Rupert); [in Coll. Rupert]. 5 ♂ ♂, 2 ♀ ♀ (Bred ex ova) Ithaca, New York, 1941 (Franclemont), [in Coll. Franclemont].

EXPLANATION OF PLATE I.

Fig. 1. *Lithophane petulca* Grt. (Ithaca, N. Y.)
Fig. 2. *L. petulca* form *ferrealis* Grt. (Ithaca, N. Y.)
Fig. 3. *L. hemina* Grt. (McLean Bogs Reserve, Tompkins Co., N. Y.)
Fig. 4. *L. hemina* form *lignicosta* form. nov. (Holotype).
Fig. 5. *L. signosa* Wlk. (Ithaca, N. Y.)
Fig. 6. *L. signosa* form *pallidicosta* form. nov. (Holotype).
Fig. 7. *L. patefacta* Wlk. (McLean Bogs Reserve, Tompkins Co., N. Y.)
Fig. 8. *L. patefacta* form *nivcocosta* form. nov. (Holotype).
Fig. 9. *L. disposita Morr.* (Ithaca, N. Y.)
Fig. 10. *L. disposita* form *argillocosta* form. nov. (Holotype).
Fig. 11. *L. bethunei* Grt. & Rob. (McLean Bogs, Reserve, Tompkins Co., N. Y.)
Fig. 12. *L. bethunei* form *luteocosta* form. nov. (Holotype).
Fig. 13. *L. bethunei* form *duscalis* form. nov. (Holotype).
Fig. 14. *L. innominata Sm.* (Ithaca, N. Y.)
Fig. 15. *L. innominata* form *illecebra* form. nov. (Paratype, McLean Bogs Reserve, Tompkins Co., N. Y.)
Fig. 16. *L. oriunda* Grt. (Ithaca, N. Y.)
Fig. 17. *L. oriunda* form *canentissima* form. nov. (Holotype.)

Aquatic Plants and Mosquito Larvae.

The value of plants as indicators of aquatic conditions was demonstrated by variations in the species which occurred in waters of varying suitability for mosquito breeding. A remarkable example was the prevalence of a certain sedge as the dominant mat-forming plant in an area consistently free of mosquito breeding while certain grasses were the chief components of mats in the troublesome mosquito-production areas.—Annual Report, Gorgas Memorial Laboratory (Panama), 1940. Washington, 1941.

Spring Aphid Aero-Plankton (Homoptera).

By H. Elliott McClure, Ord, Nebraska.

Aero-Plankton, flying and floating arthropods, were collected by means of a net attached to the fender of an automobile during the year from May 3, 1934, to May 11, 1935. From May 3 to June 19, 1934, the collections were made along a four-mile stretch of paved road, route 68, east of Horse Cave, Kentucky. The remainder of the studies were made at Danville, Illinois. The route travelled in Kentucky was bordered by fields the majority of which were unplowed and abounded with flowers especially composites. The country was rolling and there were no streams along the route. This paper concerns the aphids collected in this way. The species listed were identified by Dr. L. G. Strom, 604 South 28th, Milwaukee, Wisconsin, who has been of inestimable assistance. Data concerning the entire collection has been given in an earlier paper (McClure, 1938[1]).

The four-mile route was covered each morning between six and eight and each evening between six and seven. The length of day increased from 13.65 hours to 14.5 hours, a period of 51 minutes, from sunrise to sunset during the seven weeks of observation. During May the daily increase in light was greater than during June. In general, nebulosity during the morning collections was slightly lower and the light intensity greater than in the evening. The evening humidity and nebulosity were slightly higher and less variable than were those of the morning, therefore light intensity was less in spite of the fact that the sun set later each day. There was rain during 14 of the 38 days and most of this came during the first ten days of June. On May 11 there was a heavy dust storm. During the time of collections the evening temperatures were about five degrees higher than the morning temperatures.

In the 100 trips over the route a total of 16,687 specimens were collected. The average collection included 166 insects, or one to 63 cubic feet of air. The net strained approximately 10,500 cubic feet of air during each drive. The average morn-

[1] Insect Aerial populations. Ann. Ent. Soc. of Am., XXXI: 504-513.

ing collection was much less than the evening collection, 70 and 262 insects respectively. This is the equivalent of one insect to 151 cubic feet and one to 40 cubic feet.

The species of aphids taken are shown in the accompanying table. Twenty-seven were represented, of which eight were of economic importance. Four hundred and forty-eight specimens were collected and of these four species made up 53 percent. They were as follows: *Rhopalosiphum prunifoliae* (Fitch) 21 percent, *Toxoptera graminum* (Rhodani) seven percent, *Macrosiphum pisi* (Kalt.) 14 percent, *Pemphigus lactucae* (Fitch) 11 percent. The accompanying table shows the numbers of individuals taken over four-day periods, and indicates the periods of heaviest flight and relative abundance. The species are arranged in the order of their appearance during the period of observation so that the table shows their succession as well.

The numbers of aphids caught in morning collections were erratic, with the greatest flight activity during the four days preceding June 3. Evening collections were more than double those of the morning and were comparatively regular in numbers until what appeared to be the period of spring migration during the 12 days from May 27 to June 7. This vernal flight appeared to be associated with rising daily temperature and humidity.

RHOPALOSIPHUM PRUNIFOLIAE (Fitch). Ninety-four specimens of this species were taken, 63 in the evening and 31 in the morning. They were most abundant in the morning collections in the first four days of May and fell off rapidly to May 10. They disappeared from the morning collections by May 22 and did not appear again until June 8. The peak of evening numbers came eight days later than that of the morning, and then the numbers fell off to more or less regular low activity for the rest of the observations. Apparently the spring flight for this species came during the first fifteen days of May.

TOXOPTERA GRAMINUM (Rhodani). Only 33 individuals of this species were taken, 21 in the evening and 12 in the morning. This group was taken erratically, but apparently the period of greatest activity was during the last of May and the first of June.

TABLE 1

The succession and numbers of 27 species of aphids taken during flight in the seven weeks from May 1 to June 19, 1934, at Horse Cave, Kentucky. Numbers collected indicate the total taken in four days preceding each date.

	Numbers Collected												
	May							June					Total
Species	6	10	14	18	22	26	30	3	7	11	15	19	
Rhopalosiphum prunifoliae (Fitch)	18	13	18	6	4	0	5	4	6	7	6	7	94
Macrosiphum pisi (Kalt.)	2	2	5	5	4	8	28	8	1	1			64
Pemphigus lactucae (Fitch)	5	2	5	9	7	0	2	16	2				48
Aphis gossypii (Glover)	2	2								1			5
Pemphigus populi transversus (Riley)	2										2		4
Toxoptera graminum (Rondani)	0	1	1	0	9	0	5	7	2	5	1	2	33
Drepanaphis monelli (Davis)		1						1					2
Myzocallis ononidis (Kalt.)		1					3	3	2	3			12
Hyalopterus atriplicis (Linn.)			1		1		4	5	1	1		1	14
Aphis sp.				1	5		5	6	1		1	2	21
Myzocallis asclepiadis (Monell.)					1		1						2
Aspidaphis adjuvans (Walker)					1								1
Macrosiphum sp.					1			1	1				3
Drepanaphis acerifoliae (Thomas)					2	4	4	4	3				17
Anoecia querci (Fitch)					7		1	7					15
Eriosoma lanigerum (Hausmann)					1			1					2
Aphis rosea (Baker)						1	2						3
Macrosiphum erigeronensis (Thomas)							1	3	1	4			9
Aphis bakeri (Cowan)							1						1
Macrosiphum granarium (Kirby)								5	6	1	1		13
Clavigerus populifoliae (Fitch)								1					1
Prociphilus (fraxinifoliae (Thomas)									1				1
Aphis coreopsidis (Thomas)									1				1
Aphis illinoisensis (Thomas)										2			2
Aphis tulipae (Bover)										1			1
Colopha ulmicola (Monell.)										2			2
Macrosiphum frigidicola G. and P.)											1		1

MACROSIPHUM PISI (Kalt.). Of the 64 specimens taken, only six were collected in the morning. The numbers in the evening collections were low and regular, until none were caught during the four days preceding May 22. The collections were greatest during the four days preceding May 30, and the numbers encountered dropped abruptly after this. The temperature was rising and the weather dry during this flight.

PEMPHIGUS LACTUCAE (Fitch). This species was represented by 48 specimens, 25 taken in the morning and 23 in the evening. The numbers collected in the morning were constant and low until they ceased flying, during the four days preceding May 26. Then they increased during the four days preceding June 3, and disappeared from the air by June 7. The evening numbers were constant and low, with the only peak during the four days preceding May 18. None were collected after June 7.

Immature and Adult Stages of New Species of Chironomidae (Diptera).

By O. A. JOHANNSEN, Ithaca, New York.

In 1896 Dr. S. W. Williston described a male specimen of *Chironomus* from the island of St. Vincent without attaching a specific name to it. That he had several specimens before him from the same region, some of them females, is evident from his statement ".....and, rarely, the posterior part of the abdomen also brownish.....Length, 2-2.5 mm." In 1905 I rashly attached the specific name *willistoni* to the species without having examined a specimen, not realizing that in the Cornell University Collection there were two female specimens from St. Vincent bearing a label with the manuscript name *Chironomus delicatulus* in Dr. Williston's handwriting. Why no specific name was published by Williston cannot be conjectured. It

is possible that the male upon which the description was based was destroyed or that having discovered that the term *C. delicatulus* was preoccupied for one of Philippi's species from Chili, Williston cancelled the name. A letter received from Dr. C. H. Curran of the American Museum of Natural History and another from the late F. W. Edwards of the British Museum, indicates that in neither of the institutions mentioned is there a specimen of this speces among Williston's St. Vincent Diptera. Since the specimens in the Cornell University collection are co-types it seems desirable to enlarge upon Dr. Williston's five-line description.

CHIRONOMUS (STENOCHIRONOMUS) WILLISTONI Johannsen.

♀. Head, including antennae, proboscis and palpi yellow. Antennae 0.5 mm. long, intermediate segments bulbous on basal half, slender apically, the penultimate three-fourths as long as the slender and tapering apical segment. Basal palpal segment short, second and third subequal, each nearly three times as long as the first, fourth distinctly longer (shrivelled in the specimen). Eyes black, separated above the antennae by a distance nearly equal to the width of the narrow dorsal extension. .

Thorax pale yellow, mesonotum shining, with three slightly darker yellow vittae; pronotum much reduced.

Abdomen pale yellow, the last segment pale brownish.

Wings hyaline, unmarked, veins yellowish white; first radial branch ends at three-fourths the length of the wing measured from the humeral crossvein, the second radial branch is nearly contiguous with the first, the posterior branch ends slightly distad of the level of the apex of the media, the cubital fork lies over .06 of the wing length distad of the proximal end of the crossvein, measurements made parallel to the costal margin. Squamae with hairs; halteres yellow.

Legs yellowish white, the two spurs on each of middle and hind tibiae conspicuously black and equal; fore tibiae a sixth shorter than the femora, the combined fore femur and tibia one-sixth longer than the wing. Empodium and pulvilli well developed. Fore tarsi broken off in both specimens. Length 2 mm., wing 2 mm.

The male as described by Williston resembles the female in coloring. The fore basitarsi are said to be one-fourth longer than their tibiae. The length is given as 2 to 2.5 mm. from which one may infer that the male measured 2.5mm.

Dr. H. K. Townes called my attention to the similarity between *Chironomus* (*Stenochironomus*) *macateei* Malloch and *C. willistoni.* Both belong to that group of the subgenus *Stenochironomus* in which the wings lack dark markings. They are similar in coloring although the apex of the abdomen in *C. macateei* is much darker. They appear to differ, however, in the basitarsus-tibial ratio which is given at 1.25 by Williston for *C. willistoni,* and as 1.20 by Malloch for *C. macateei.* Specimens of the latter, one from the type locality, have the ratio of 1.14-1.16. The cubital fork also is not so far distad of the crossvein in the latter, which species is also a trifle greater in size.

Orthocladius (Dactylocladius) dubitatus n. sp.

This is a species which in American literature has in part been referred to *O. sordidellus* Zett. Though resembling it in color, Zetterstedt's species differs in some structural characters being now referred to the subgenus *Psectrocladius.*

♂. Head yellow, eyes bare, reniform; antennae including basal segment brownish, ratio of apical segment to the remaining flagellar segments of the antennae, 0.85; apical segment with numerous short hairs toward the tip. Palpi brownish, ration of lengths of segments to each other as 7: 13: 13: 18.

Thorax yellow including pronotum and scutellum; the three mesonotal vittae, metanotum, pectus and spot on pleura, dark brown, mesonotum somewhat shining.

Tergum of abdomen dark brown or blackish, venter brown, both with slight greenish tinge. Hypopygium brown, its tergite without anal point, basistyle with nearly straight inner margin and without mesad projecting lobe; dististyle simple, inner margin straight, subapical spine, blunt, brown.

Legs dusky yellow, ratio of fore basitarsus to its tibia, 0.65; fore tibia with one, middle tibia with two, hind tibia with one long and one short, slightly flexed spur; hind tibial comb present; empodium large, nearly as long as the claws; pulvilli vestigial; claws with minutely bifid or trifid apex.

Wings somewhat milky, microtrichia not evident; costa distinctly produced; R_1 and Cu_2 end equidistant from the wing base, R_{2+3} ends slightly before the mid distance between the tips of R_1 and R_{4+5}; Media ends slightly behind the wing tip; R_{4+5} ends well beyond the level of the tip of Cu_1; cubitus forks distad of the crossvein; anal vein is produced far beyond the

cubital fork; anal lobe well developed, right angled. Squama with complete fringe; halteres yellow. Length of insect 2.1 mm., a fifth longer in life, wing 1.5mm.

♀. Similar to the male in coloring though tending to be lighter, the vittae of the mesonotum in some cases reddish brown. The first flagellar segment of the antenna is two-thirds, the sixth is over twice as long as each of the three oval intermediate segments. Tarsal claws sharp. Length of insect 1.75, a fifth longer in life.

Ithaca, NEW YORK. Types in the Cornell University collection.

The larva finds a place in couplet 32 in my key (Aquatic Diptera III, p. 60, 1937), the pupa in couplet 24 (l. c., p. 62.)

Cricotopus flavipes n. sp.

Larva. The larva lying on its side, mines in the leaves of the pondweed, *Potamogeton.* When full grown it measures 6.5 mm. in length. Near each caudo-lateral margin of body segments 4 to 9 (abdominal segments 1 to 6) there is a hair pencil composed of 4 to 6 hairs and on the tenth there is another with 2 to 5 hairs. Ventro-laterally there are in addition several single shorter and very slender hairs on each side of each intermediate segment and dorsally several fine, still shorter hairs.

The head is brown with the margin of the labial plate and the apex of the mandible blackened. There are two eyespots on each side of the head the anterior spot very much smaller than the other. The antennae are very minute (Fig. 7), less than one-fourth as long as the mandible, the first segment scarcely longer than wide, the larger of the two blade-bristles at the tip of the basal segment rather wide and extending nearly to the tip of the fourth segment, the apical four segments together about as long as the basal segment. On the ventral side of the labrum are the usual curved bristles of which a subapical pair is distinctly larger and stouter than the others. A median pair of bifid bristles was not observed. The premandibles (Fig. 6) are unusually stout, curved and blunt-pointed apically. The mandibles (Fig. 2) which lack wrinkles on the convex side, likewise are stout, darkened at the tip, with two lateral bristles, a short accessory tooth, but apparently lacking a mesad projecting brush. The labial plate is very convex in cross-section. When viewed from the ventral side (Fig. 4) only five median teeth show distinctly, the head being strongly laterally compressed, but when the plate is flattened out (Fig. 3) 13 teeth are clearly in evidence, the

second laterals being shortest. Prolegs, claws, anal gills and preanal bristle-bearing papillae are similar to those of *C. trifasciata.*

Pupa. The pupa, which measures 4 mm. in length, exhibits the adult coloring a short time before transformation. The thoracic respiratory organs are minute, delicate, white in color, without spinules and clavate in shape, the diameter at the apical fourth about .02 mm. which is a quarter of the total length. The first, seventh and eighth tergites are bare, the second to sixth with a large transverse patch of shagreen on the anterior half and a narrow transverse shagreened fascia near the posterior margin. The intersegmentalia of segments two to six have anteriorly directed spinules which are strongest on the posterior margin of the second tergite. The anal segment, which lacks shagreen, bears lateral lobes each terminating in three nearly straight bristles. The genital sacs in the male extend well beyond the apices of the bristles (Fig. 8), in the female the bases of the bristles lie distad of the caudal ends of the sacs.

Adult. ♂ and ♀. Yellow in ground color, the pronotum, scutellum, halteres, legs and terminalia yellowish white. The broad mesonotal vittae, the pectus, a pleural spot, metanotum, anterior three-fourths of each abdominal tergite except the first and last two or three, dark brown to blackish, in teneral specimens somewhat paler. Antennae brown, basal segment darker, palpi brown; eyes pubescent. Antennal ratio of the male 1.65; of the female 0.44, the sixth segment 1.75 times as long as the fifth, the division line between them feebly marked.

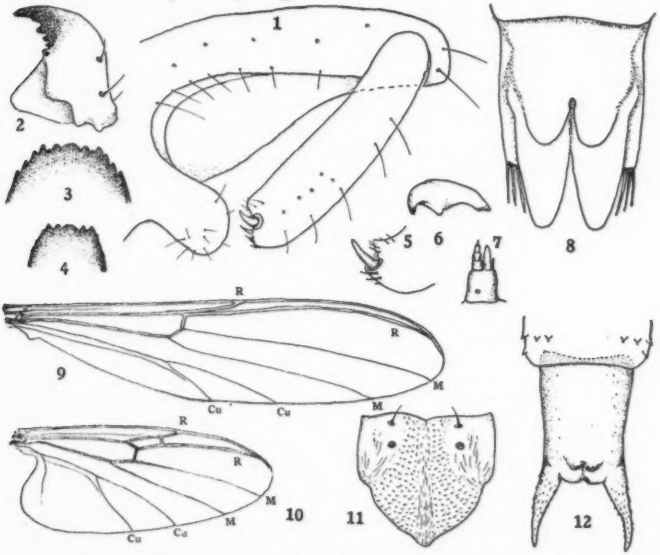
Ratio of fore basitarsus to tibia 0.55 to 0.60; fore tarsi not bearded; empodium 2/3 as long as the claws, pulvilli minute.

Wings milky hyaline, veins pale, R_{2+3} ending about half-way between the tips of the anterior and posterior branches of the radius; costa indistinctly produced beyond the tip of R_{4+5} which ends well beyond the level of the tip of Cu_1; media ends slightly behind the tip of the wing; cubitus forks distad of the crossvein; anal lobe well developed. Squamae fringed.

The hypopygium is of the normal *Cricotopus* type (Fig. 1), the anal point lacking; basisityle with prominent basal lobe which is slightly wider beyond the middle; the apical spine of the dististyle is about 2/3 as long as the diameter of the dististyle near the apex (foreshortened in Fig. 1). Length of male 3.25 mm., of female 2mm., of the wing of both sexes 1.75 mm.

Reared by Mr. C. O. Berg, July and August at Ocqueoc Lake, Presque Isle County, MICHIGAN. Types in Cornell University collection.

The adult of this species is readily distinguished from other members of the genus in having non-annulate yellow legs. The larva will find a place in couplet 1 in my key (Aquatic Diptera III, p. 52, 1937) with Group *Eucricotopus,* differing in having unusually short antennae. It will also find a place in couplet 29, p. 60, which again leads to *Cricotopus* (Group C) but differs in having short antennae and in lacking a mandibular brush. The pupa will find a place in couplet 3, second paragraph, in the key on page 52, differing from *C. fugax* in having non-spinose respiratory organs. It will also trace to the second paragraph of couplet 26, p. 62, *Cricotopus,* differing in the form of the respiratory organ.



Cricotopus flavipes n. sp.: 1, Male clasper, X285; 5, Apex of dististyle, X285. Larva: 2, Mandible, X190; 3, Labial plate (flattened), X190; 4 Same, ventral aspect, X190; 6, Premandible, X190; 7, Antenna, X380 Pupa: 8, Caudal segment of male, X75.

Macropeza similis: 9, Wing, X12.

Jenkinshelea albaria: 10, Wing, X12. Pupa, female: 11, Operculum, X75; 12, Caudal segment, X37.

Ceratopogon albarius Coquillett and Related Species (Diptera: Ceratopogonidae).

By O. A. JOHANNSEN, Ithaca, New York.

Described in 1895 by Coquillett from Florida, it was redescribed in 1908 by me under the name of *magnipennis* and assigned to the genus *Johannseniella* Will. Later, together with several other species, it was placed by Malloch in the genus *Johannsenomyia* Mall. An examination of *albaria* however reveals that if we are to recognize the numerous genera into which *Ceratopogon* of Meigen has been divided, this species must be transferred to *Jenkinshelea* Macfie (emendation for *Jenkinsia* Kieffer, preoc.), the type of which is *J. setosipennis* Kieffer, from India, and of which a figure is given by Macfie (1939). The American species agrees with other species which have been assigned to this genus by Macfie and deMeillon in having the thorax somewhat jutting over the head; an unusually broad wing, a costa more or less produced (Fig. 10), wing surface covered with microtrichia, medial fork broadly sessile, strongly developed anal angle; unarmed femora, and the fifth tarsal segments with strong spines below.

In *Johannsenomyia* the thorax is rounded in front and not projecting over the head, the wing is of moderate width, the costa is no produced, and the anal angle is not prominent. Kieffer (1917) assigned a South American species, which he named *J. boliviensis,* to the genus. An examination of the type specimen in the National Museum in Budapest, however, showed that it does not belong in *Jenkinshelea.* It is a normal *Palpomyia* with a tubercle or spine in the middle of the front margin of the thorax, the latter not produced over the head, the fore femora provided with spines, the middle and hind femora, as well as the fifth tarsal segments, unarmed; thus falling in *Palpomyia,* Group A, of Edwards (1926).

DeMeillon (1937, p 263) has suggested that *Jenkinshelea* be regarded as a subgenus of *Macropeza* to contain *J. setosipennis* Kieffer (type), *boliviensis* Kieff, and probably *Macropeza similis* Johannsen (1927) and that a new genus be

erected for the Ethiopian species with enlarged basal angle of the wing, namely *acraensis* Ingram and Macfie, *polyxenae* DeMeillon, and *rhodesiensis* DeMeillon. This suggestion however cannot be entertained, since Macfie's figure shows that *J. setosipennis* has an enlarged anal angle while *boliviensis* is a normal *Palpomyia* as stated above. As for *Macropeza similis* from Formosa, the figure here given (Fig. 9) indicates that it is clearly a true *Macropeza* as defined in Macfie's key (1940). It should be noted that this key contains misprints in couplet 5; the figures at the right should read 6 and 7 respectively instead of 5 and 6.

A pupa was collected by Dr. J. G. Needham at Old Forge, New York, from which a female of *J. albaria* was reared. The exuviae indicate that the insect belongs to the *Palpomyia* group of the Ceratopogonidae.

The respiratory organs were unfortunately broken off and lost. The operculum (Fig. 11) is shield-shape with an anterior pair of setae, a seta-base (sense pit?), behind each seta, the posterior half rugose with numerous minute low tubercles. The last segment (Fig. 12) is more deeply pigmented than the anterior parts; the pair of terminal processes slender, elongate, and only slightly divergent. The surface of this segment is provided with closely set, minute, stout spinules, the spinules on the terminal processes larger and more sparsely distributed. The spines in the transverse rows of the intermediate segments are short and stout. The condition of the exuviae does not permit a more extended description. Malloch has described the respiratory organs.

I have seen specimens of *J. albaria* from New York, New Jersey, Georgia, Florida, and Illinois.

References: Coquillett, D. W., Proc. Ac. Nat. Sci. Phila., 1895, 308. Edwards, F. W., Trans, Ent. Soc. Lond., 1936, 417. Johannsen, O. A., Bull. 124: N. Y. State Mus. 1908, 268; and Ent. Mitt., 16: 424, 1927. Kieffer, J. J., Ann. Mus. Nat. Hungr., 15: 331, 1917. Macfie, J. W. S., Trans. Roy. Ent. Soc. Lond., 89: 7, 1939; and Ann. Trop. Med. Parasit., 34: 13-30, 1940. DeMeillon, B., Ann. S. Afr. Mus., 32: 263, 1937.

Descriptions of two new Nearctic species of the genus Hydrellia reared from Pond-weed (Diptera: Ephydridae).

By Ezra T. Cresson, Jr.

Among some material received from Mr. C. O. Berg of the University of Michigan reared from several species of pond-weed of the genus *Potamogeton*, I found the following apparently undescribed species. Mr. Berg has kindly allowed the types to be placed in the Collection of The Academy of Natural Sciences of Philadelphia.

Hydrellia luctuosa new species.

Similar to *H. caliginosa* Cresson, 1936, but entirely black except the halteres, and without any cinereous vestiture; also is considerably smaller.

Antennae, palpi and tarsi, black; halteres pale yellow.

Opaque, except scutellum and abdomen somewhat shining. Vestiture dark grayish in certain aspects, never cinereous; lunule slighter lighter.

Ocellars distinctly stronger than proclinate orbital. Antesutural dorsocentral well developed and about as far removed from postsutural one as their distance from each other. Genital segment small, inconspicuous. Anterior series of three to four strong setae on mid femur, particularly in the males, and the mid tibiae of that sex somewhat thickened. Costa III about as long as II.

Length, 1.5 mm.

Type.—Male; Bessey Creek, Cheboygan County, Michigan; August 14, 1941; (C. O. Berg; from *Potamogeton zosteriformis*); [A. N. S. P., no. 6620].

Paratypes.—5 ♀; topotypical, with same data. 1 ♂; with same data except from *P. richardsoni.* 1 ♀; with same data except from *P. natans.* 1 ♀; Douglas Lake, Cheboygan County, VII 3, 1941; from *P. richardsoni.* 2 ♂; Nigger Creek, Cheboygan County, VIII 21, 1941, from *P. tenuifolius.*

Hydrellia ascita new species.

Very similar to *H. bilobifera* Cresson, 1936, but appearing different in having the mesonotum, including humeri and notopleura uniformally dark, and the tibiae mostly black.

Pale, yellow to orange: ground of face, apex of antenna III, palpi, apex of fore coxa, extremity of femora, base and apex of tibiae and base of tarsi. Halteres whitish. Wings clear with black veins.

Vestiture of dorsal surfaces brownish; lunule, pleura and ventral surfaces more cinereous. Face sericeous, niveous to golden. Mesonotum, humeri and notopleura dark, contrasting with the lighter pleura.

Frons transverse. Face about one-fifth width of head; orbits strongly flaring to moderately broad cheeks. Antesutural dorsocentral well developed, but shorter and rather approximate to the postsutural one; no second postsutural dorsocentral noticeable. Setation of legs inconspicuous. Segment V of male with distinct, bilobed, caudal margin. Costa II not much longer than III.

Length, 1.5 mm.

Type.—Male; Nigger Creek, Cheboygan County, MICHIGAN; August 21, 1941; (C. O. Berg; from *Potamogeton tenuifolius*); [A. N. S. P., no. 6621].

Paratypes.—4 ♂, 11 ♀; topotypical, with same data.

The Terms Instinct and Intelligence as Used in Discussions of Insect Behavior.

By PHIL RAU, Kirkwood, Missouri.

I have a predilection for the good old-fashioned word instinct, and propose to use it in preference to any one of the many substitutes invented to take its place. It is true many sins have been committed in the name of instinct, but these have been by scholasticists, lay writers and philosophers, and not by students of comparative psychology. The misuse of the word has not been sufficiently great, however, to warrant its disuse in studies of insect behavior. In my opinion, nothing is to be gained by substituting for it such terms as "innate behavior", "inborn capacities", "inborn powers", "stereotyped behavior", "automatic acts", "spontaneity", "inherited propensity", "mechanical automata", "automatized reasoning", "unlearned acts", "motor memory", "muscle memory", "species memory", or what not. Such terms seem ambiguous, are con-

fusing and hard to define, and lend themselves too readily to the imagination.

Of course, in the early days of the study of insect behavior, naturalists (and even the great Fabre was one of them) misused the word by defining it as something which divine Providence had by special creation implanted in lowly creatures, since if left to their own intelligence they would not survive. If anything at all should be attributed to Providential implantation, it should be the mere physiological processes, such as egg-laying, silk-spinning, reflex bleeding in certain beetles, defecation, etc.; but in this connection the term reflex is perfectly safe to use, since such phenomena are produced without the necessary intervention of choice or intention.

The classic description of instinct in the lower orders "as it recurs, with unimportant modifications in countless works on the subject" is given by Wheeler (Essays in Phil. Biol. p. 38-39, 1939) when he states:

"Any behavior is designated as instinctive which originates in an impulse. * * * The impulse is evidently the center or core of the instinctive activity, which is peculiarly fixed and mechanized, very rigidly dependent on inherited structure or organization and therefore very uniform, or variable only within very narrow limits, in all the individuals of one or both sexes of a species. Behavior of this kind has the attributes of compulsion or necessity and it is at the same time highly adaptive or purposive, though the organism manifesting it is unaware of any purpose, or at any rate it is usually aware only of an immediate purpose, even when the behavior is accompanied by consciousness."

It seems to me that instinct is even more than this, for instincts are subject to change in the long view; new instincts are acquired and become rooted in the make-up of the species, and unused ones are thrust into the limbo of obsolescence. That instincts are not something unchangeable may best be seen if we review something of the origin of instincts. Wheeler,[1] Bouvier[2] and many other leaders in the study of insect psy-

[1] Essays in Philosophical Biology, 1939.

[2] Psychic Life of Insects, 1922.

chology of the last thirty years believe that instinct is inherited habit, that it is the sum total of the cumulative effects of actions that had their beginnings in acts of intelligence, and by repetition of the acts they become habits, which in time become fixed and maintained by heredity and thereby become crystallized as instinct. This, let it be understood, does not mean that instincts once acquired are forever rigid and immutable, but rather that instinct is susceptible to change, permitting intelligence to reach out to acquire new habits which may place the organism in better harmony with its environment.

The word intelligence used in comparative psychology should, I think, also be retained. The word itself implies its meaning without much head work on the part of the reader. I sometimes like Forel's term "plastic behavior," which means the same thing, but after all there is something mysterious about the phrase. One would hardly use it in describing human behavior that smacks of intelligence, and I think that after all, since infra-humans differ from us so little in mental equipment, we should not discriminate against them. I often wonder why Forel coined the phrase, since he had recourse to such a meaningful word as "intelligence". But he lived at a time when intelligence was conceded to the human race alone, and all other creatures were limited to instinct. Forel knew that this was not true, for he had occasion repeatedly to see behavior in ants that had a semblance of intelligence, and in his human wards at the Zurich Insane Asylum, as well as in the work-a-day world, I am sure he often saw human behavior that was more or less instinctive. He tried, therefore, to bridge the gap with the phrase "plastic behavior." But in the light of new experiments and interpretations in animal behavior, I think his phrase has outlived its usefulness, and that henceforth we should use the word intelligence, thus giving animals full credit for all that is due them.

Probably the best definition of intelligence as used in insect behavior is to be found in the monumental work of Warden, Jenkins and Warner,[3] in which they say that intelligence may

[3] Comp. Psychol. 2: 808, 1940.

be "(a) the capacity to learn, (b) the ability to adapt learned or unlearned behavior to new situations, (c) the ability to understand situations, (d) the power of generalization and abstraction." Intelligence may fall into any one of the above categories or in several of them.

And now a word about the term "mind," which probably connotes something different to each user of the word. Discussions grow ponderous and disagreements wax hot without either party offering any definition of this key term. One often meets the phrase "the mind of the insect"; in fact, I have in mind important works by Snodgrass and by Washburn with that title. There is a certain vagueness about such a term which makes the reader wonder where the seat of it is and of what it is composed.

The insect mind is, it seems to me, composite, and the ingredients are combinations in various degrees of reflex, instinct, and intelligence, as defined above; mind is the sum total of these three.

Ever mindful of the limitations of the terms reflex, instinct and intelligence, it is my plea, in conclusion, to urge the return to these homely phrases in the study of animal behavior, in preference to the ambiguous substitute terms that have crept into the language, evidently because it was easier to sidestep a disagreeable issue that had a direct bearing on human mental equipment than to bravely face the issue.

Appius ilaire ilaire Godart in Colorado. (Lepid. Pieridae). On several occasions in the past ten years I have suspected that I saw this tropical species on the prairie near Colorado Springs. This morning, July 7, 1941, I had the opportunity of verifying its occurrence in the State. A slightly worn female fed for better than five minutes within two feet of me at the blossoms of "Amur River Privet". I had no net at home and so did not make a capture. However, I am quite familiar with American tropicals and particularly neotropical *Pieridae*. I have collected them extensively and hold one of the largest collections of the family in North America. Thus I feel competent to determine this species and race "in the bush" and not necessarily in the hand.

This specimen had the wide margins and typical coloration of the nymotypical race. I had the opportunity to study its pattern very fully even to the slight yellow-ochre scalation along the costal margin of the forewing on the underside. The specimen was definitely not a form of *A. monuste* or *A. josepha*. The great breadth of the marginal band and the color of the underside of the hindwings, faintly creamy rather than strongly yellow rule out race *poeyi Butler*, the only form that is definitely accepted as flying in the United States by McDunnough (*Mem. So. Calif. Acad. Sci.*, 1: 10. 1938). Cross did not list the species from this state in his "Butterflies of Colorado" (*Proc. Colo. Mus. Nat. Hist.*, 16: 3-28, 1937).—F. MARTIN BROWN, Colorado Springs, Colorado.

Notes on Johnson's South Dakota Chrysomelid Paper (Coleoptera).

This article by Johnson appeared in Entomological News for January, 1941 (pp. 9-14) and presented data of a desirable nature. Such distributional information as this is undoubtedly of more than passing interest to a large number of workers and should therefore be encouraged. However, the paper contained certain irregularities that would seem to merit attention in order to preclude their perpetuation by less experienced entomologists. The present writer offers these suggestions with the reservation that they be accepted as simple scientific form, entirely divorced from any personal antipathy.

The name Chrysomelinae refers to a taxonomic category of subfamily proportions—not a tribe as stated by Johnson.

Employment of the old generic name *Chrysomela* for *Chrysolina auripennis* (*Say*) and its related species is to be discouraged, particularly since our American authorities (Van Dyke, Brown) in their recent revisional studies follow the rules germane to this situation (See Maulik, 1925, Anns, and Mag. Nat. Hist. (19) XV, pp. 95-96). Likewise, the use of *Lina* by a coleopterologist is surprising for it was correctly discontinued long ago by no less authorities than Schaeffer, Fall, Van Dyke et al.

Zygogramma suturalis (nec *sutoralis* Johnson, 1941) is the correct spelling for this Fabrician species.

With the abundant availability of literature, errors of this nature are difficult to justify; the more so when they are perpetrated by an authority in the field. Although seemingly of little consequence, these errors contribute to a lack of confidence in the determinations and other included data, thus detracting considerably from the probable true value of the paper.

B. E. WHITE, Merced, California.

A New Species of Phyllomyza from Virginia (Diptera: Milichiidae).

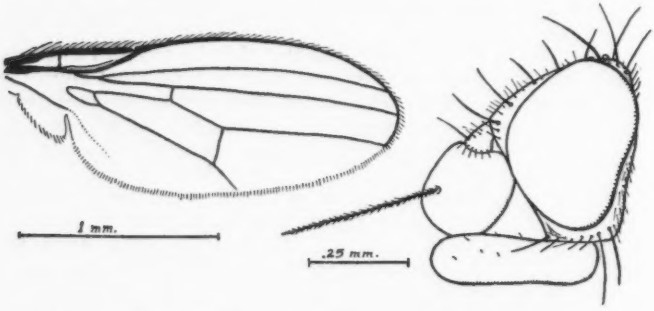
By Geo. Steyskal, Detroit, Michigan.

Phyllomyza milnei new species.

♂. Length, body and wings, each 2 mm.

Color black, slightly gray pruinose, more polished on pleura and abdomen. The knees, tibiae (brownish medially) and tarsi yellow.

Head profile as in figure, the front .45 total width of head, slightly wider anteriorly. Parafrontals and ocellar triangle lightly pruinose but contrasting with the matt black interfrontal stripe. Three outwardly curved upper parafrontal bristles and two incurved lower parafrontals. The upper and lower parafrontal stripes are nearly disjunct and bear a few hairs. Two rows of about four small incurved hairs each in middle of interfrontal stripe (cruciate bristles). Antennae with short pubescence only, the arista distinctly pubescent. Palpi with short pubescence and a few scattered short hairs. Proboscis geniculate but very short and hidden between the palpi. Ommatidia in about 35 rows from front top to rear bottom of eye.



Thorax with two dorsocentral bristles, the anterior pair half as long as the posterior. A small but distinct pair of prescutellars. Hair of thorax long, erect, in five or six irregular rows between the anterior dorsocentrals. Apical scutellar bristles about twice as long as scutellum, converging to meet at their tips. Metanotum polished. Halteres yellow. Calypters whitish with a white fringe. Wings as figured, hyaline, the veins yellow. Spur of middle tibiae half as long as metatarsus.

Abdomen with intermediate segments subequal in length, with sparse coarse hairs and marginal bristly hairs.

Holotype male, Mountain Lake, VIRGINIA, June 30, 1940, yl. no. 3 (L. J. and M. J. Milne), no. 55829 in United States National Museum. *Paratypes,* males, same locality; two, July 18, 1938, in U. S. N. M.; four, July 18, 1938, and one, July 23, 1940, in the author's collection; one, June 30, 1940, one, July 1, 1940, and one, July 8, 1940, returned to Prof. L. J. Milne, Randolph-Macon Woman's College, Lynchburg, Virginia.

Melander separated his genus *Neophyllomyza* principally on the reduced number of dorsocentral bristles. Both *Phyllomyza* and *Neophyllomyza* are well represented in the palaearctic region and Hendel has followed Melander in referring the majority of the species (with 2-3 dorsocentrals) to *Neophyllomyza,* but Duda, followed by Hennig (1937), has shown that a better grouping is based on the number (2 or 3) of upper parafrontal bristles. At any rate the genera are very similar. The only North American species definitely referable to *Neophyllomyza* is the genotype, *quadricornis* Melander. The present species has affinities with *P. hirtipalpis* Malloch (Maryland) and *P. tetragona* Hendel (Central Europe).

There are also two females in the author's collection which may be conspecific, but there seem to be no characters whereby they might be separated from *approximata* Malloch. Moreover, a male of *P. hirtipalpis* Malloch was taken at Mountain Lake, Virginia, on July 9, 1938. *P. approximata* may be the female of either *hirtipalpis* (as was considered likely by Malloch) or of *milnei,* in which latter case it would have priority.

LITERATURE CITED

HENNIG, W. 1937. Milichiidae et Carnidae, in Erwin Lindner's Fliegen der paläarktischen Region, vol. 6_1, fasc. 60a, pp.1-91.

Current Entomological Literature

COMPILED BY THE EDITORIAL STAFF.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the current or preceding year unless otherwise noted. All continued papers, with few exceptions, are recorded only at their first installment.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Note. References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of **Entomological News** for 10c. The number of, or annual **volume**, and in some cases the part, heft, &c., the latter **within ( )** follows; then the pagination follows the colon :

Papers published in the Entomological News are not listed.

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These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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Lepidoptera—From the South, including P. palamedes, T. halesus and E. jucunda to exchange for fauna from other localities. H. W. Eustis, Woodbine Rd., Lakemont, Augusta, Georgia.

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Wanted—To buy, specimens of bees of the genus **Nomada,** any quantity, especially North American. Quote price, locality. Hugo G. Rodeck, University of Colorado Museum, Boulder Colorado.

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